# Praktikum - penyelesaian Integral Ekrak

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$$I = \int_1^{10} x^2 \exp(-x)\, dx$$

$$I = \int_1^{10} x^2 e^{-x}\, dx$$

$$= \int x^2 e^{-x}\, dx$$

$$= x^2(-e^{-x}) - \int -e^{-x}\, 2x\, dx$$

$$= x^2(-e^{-x}) - 1(-2)\int e^{-x} x\, dx$$

$$= x^2(-e^{-x}) + 2x\int x e^{-x}\, dx$$

$$= x^2(-e^{-x}) + 2(x(-e^{-x})) - \int -e^{-x}\, dx$$

Gunakan sifat Integral $\int -f(x)\, dx = -\int f(x)\, dx$

$$= x^2(-e^{-x}) + 2(x(-e^{-x})) + \int e^{-x}\, dx$$

Gunakan $\int e^{-x}\, dx = -e^{-x}$

$$= x^2(-e^{-x}) + 2(x(-e^{-x}) - e^{-x})$$

Sederhanakan

$$= -x^2 e^{-x} - 2xe^{-x} - 2e^{-x}$$

Kembali ke limit dan Integral $\int_1^{10}$

$$= (-x^2 e^{-x} - 2xe^{-x} - 2e^{-x}) \int_1^{10}$$

Menggunakan $f(x)|_a^b = f(b) - f(a)$

$$= -10^2 e^{-10} - 2 - 10e^{-10} - 2e^{-10} - (-1^2 e^{-1} - 2.1e^{-1} - 2e^{-1})$$

$$= -\frac{122}{e^{10}} + \frac{5}{e}$$

$$\boxed{I \approx 1,83386}$$